FAA CM Training Conference
July 24-26, 2001

FAA Configuration Management Training Conference 2001

CM Planning and Management

Course Objectives

At the end of this course, participants will:

- *Understand FAA requirements for CM Planning and Management.*
- *Know what is needed to put together an effective CM Planning and Management process.*
- *Understand what is needed to establish an effective CCB.*

Course Overview

This course is meant to be interactive and building on best practices.

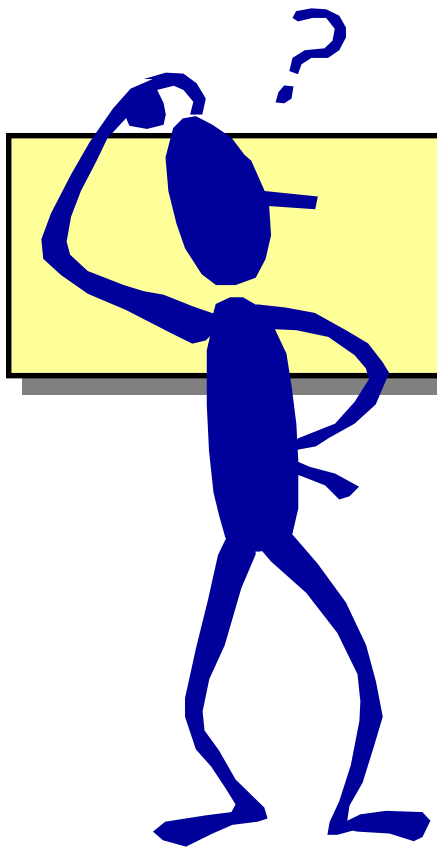
Topic Outline:

1 - Introduction to CM Planning and Management

2 - "How To's" of CM Planning and Management

3 - Putting it All Together

4 - Summary



1 - Introduction to CM Planning and Management

FAA CM Planning and Management Defined

I-4.1: CM Planning and Management:

This activity includes planning, coordinating, and managing all tasks necessary to implement CM principles and to conduct CM activities.

CM planning and management occurs throughout all life cycle phases.

Documentation of the planning process and development of the CM Plan formalizes involvement and ensures continuity of configuration management practices at all levels of management.

CM Planning and Management Over the Life Cycle

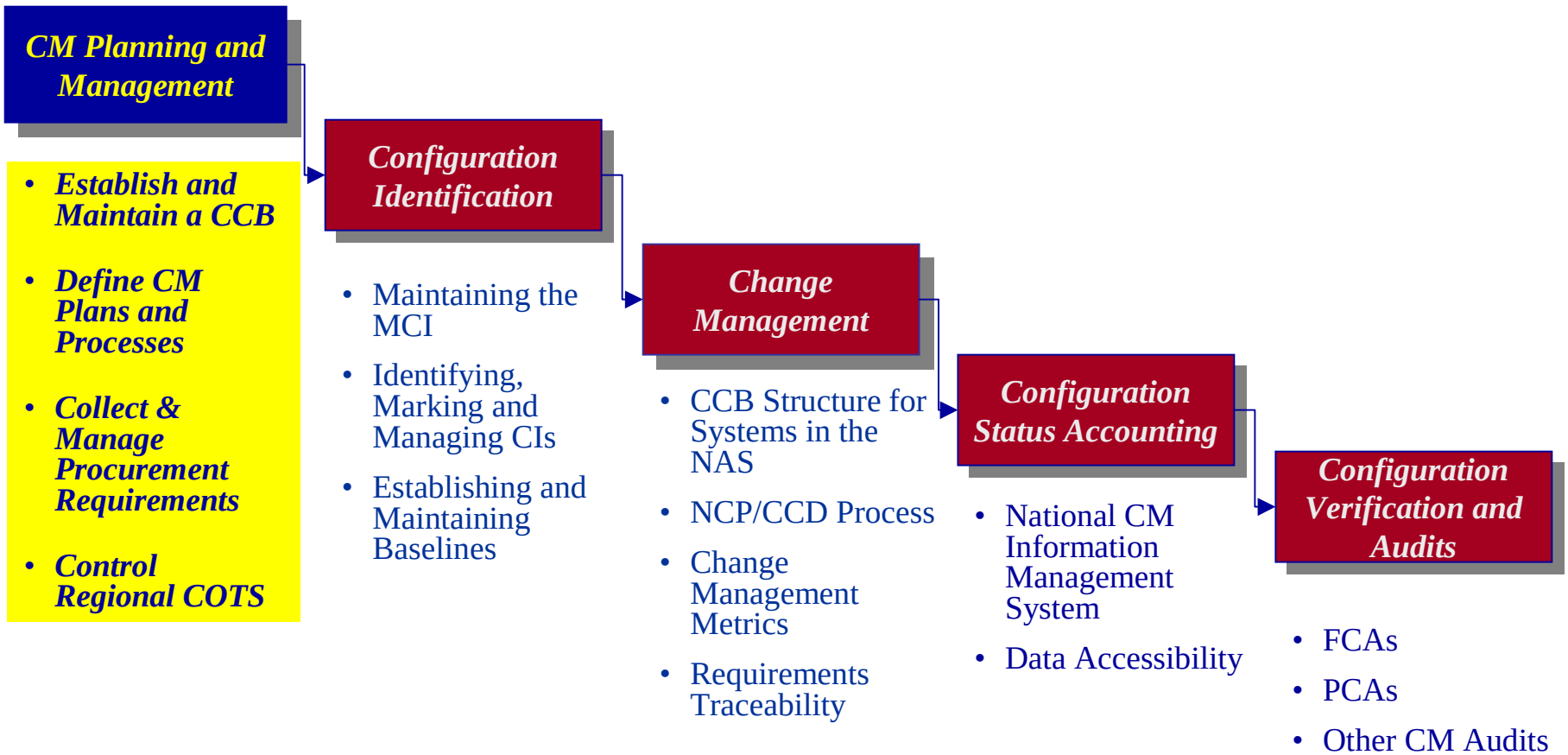
Ensure that you have the necessary CM resources

Understand and facilitate relationship of planned capabilities with that of existing configurations

- *Identify your CM environment*
- *Put together the CM Plan, CCB Charter and OPI procedures*
- *Put together Vendor CM Requirements*
- *Coordinate, Communicate, Train, Revalidate needs of all users*

Understand configuration needs from a maintenance and acquisition perspective

CM Planning and Management



So What Exactly is CM Planning and Management?

- ***What*** do I have to do to implement CM for the life of this system/CI/facility?
- ***How*** will I perform CM (CI, CC, SA, V&A), document it, communicate it, measure its effectiveness?
- ***When*** will I do it?
- ***Who*** helps me do it, who needs access to CM information and who's information do I need?

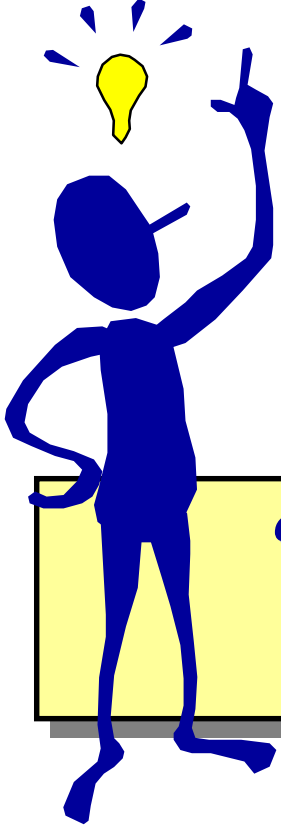
Can I See Planning and Management In Context?

- FAA Orders
- RD, ASP, IPP
- Maintenance Philosophy
- iCMM, ISO, Other Internal Standards
- Agency Initiatives
- Information and/or Technology Requirements

- Approved Programs and Baselines
- Request for CM Input to Procurements
- Configuration Information Requests
- Vendor Deliverables

- CM Plans
- CCB Charters
- Vendor Requirements
- Documentation Listings
- CM Performance Reports /Assessments
- OPI CM Processes and Procedures
- Training/Communication Plan(s)

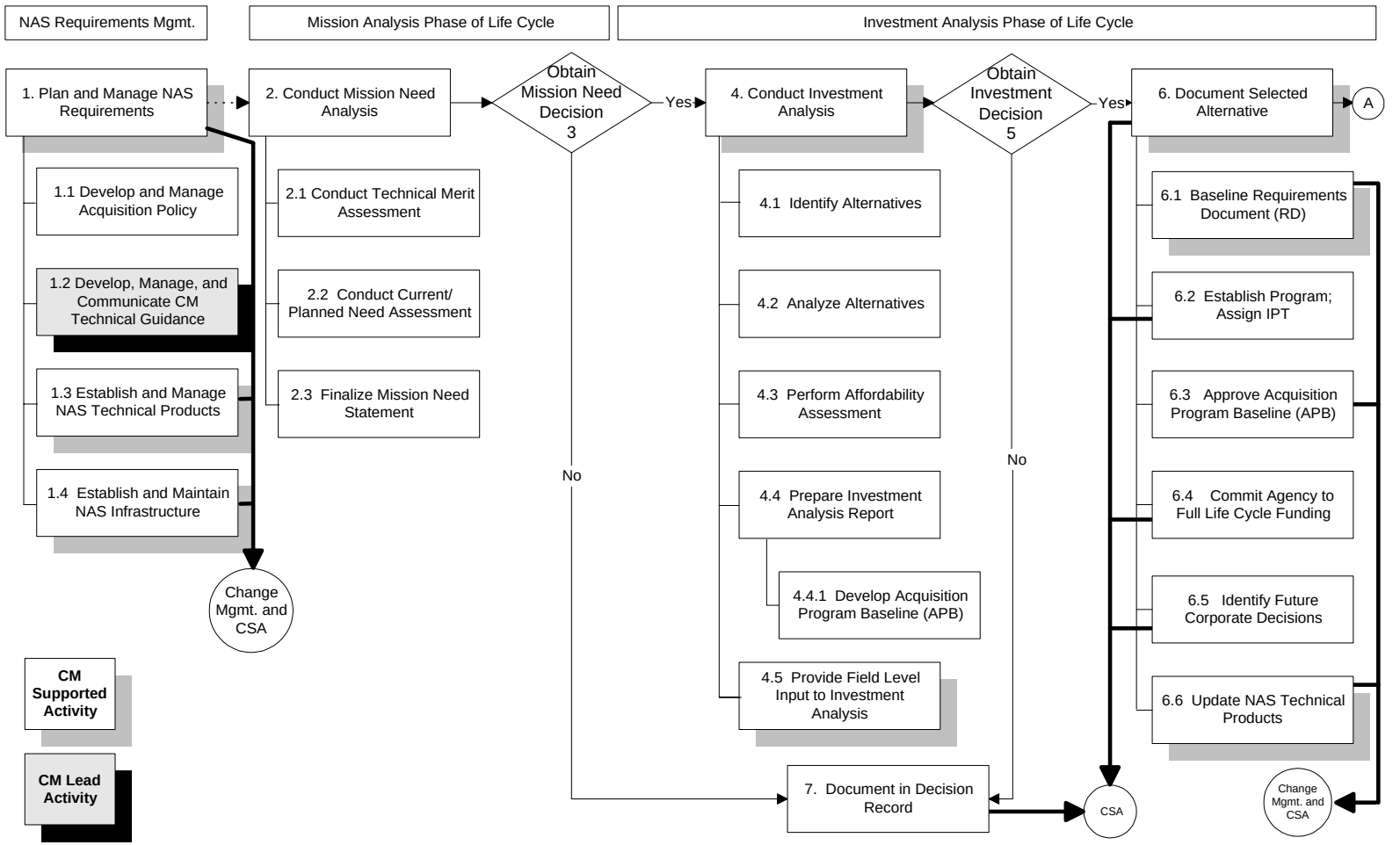
- Program Management Personnel
- CM Personnel (Inside/Outside Org.)
- Engineering Personnel



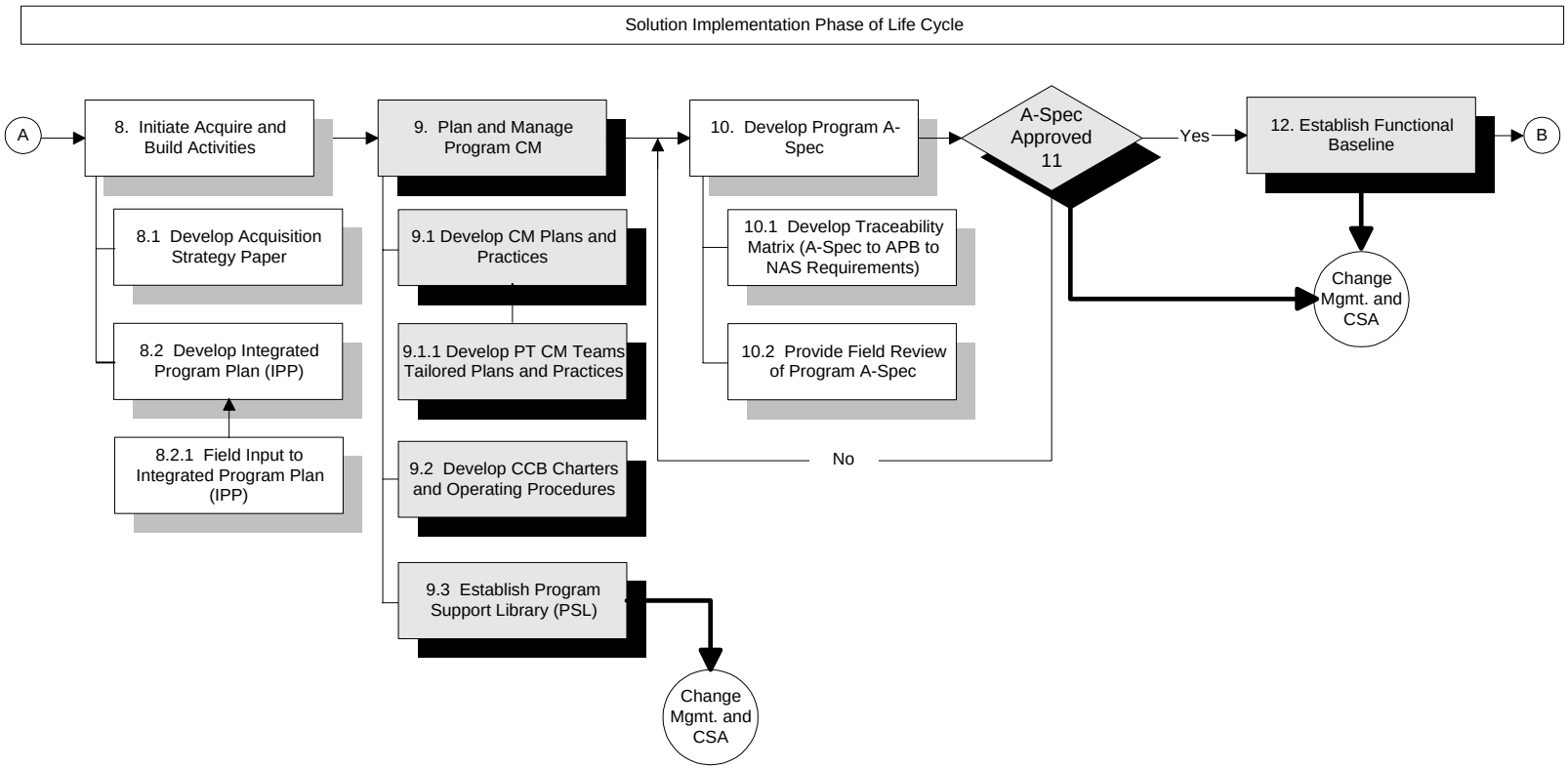
"How To's" of CM Planning and Management

- ☑ What Am I Planning For
- ☐ *What Do I Need To Do*
- ☐ *Where Do I Document What I Do*

First of All, What am I Planning For...



… More Planning …



CM Lead Activity

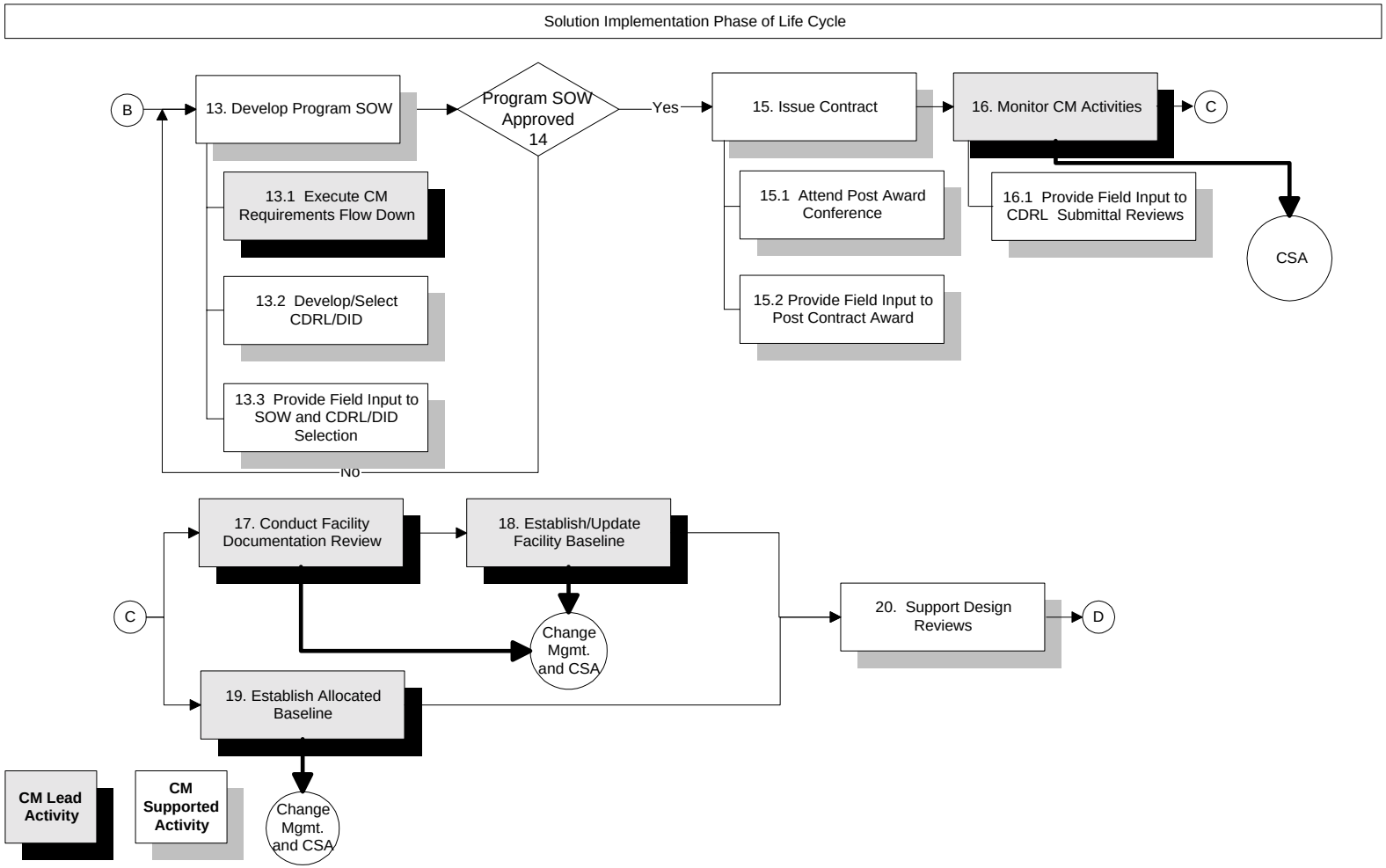
CM Supported Activity

100. Perform Change Management -**101.** Perform Configuration Status Accounting -**108.** Perform Modification Tracking

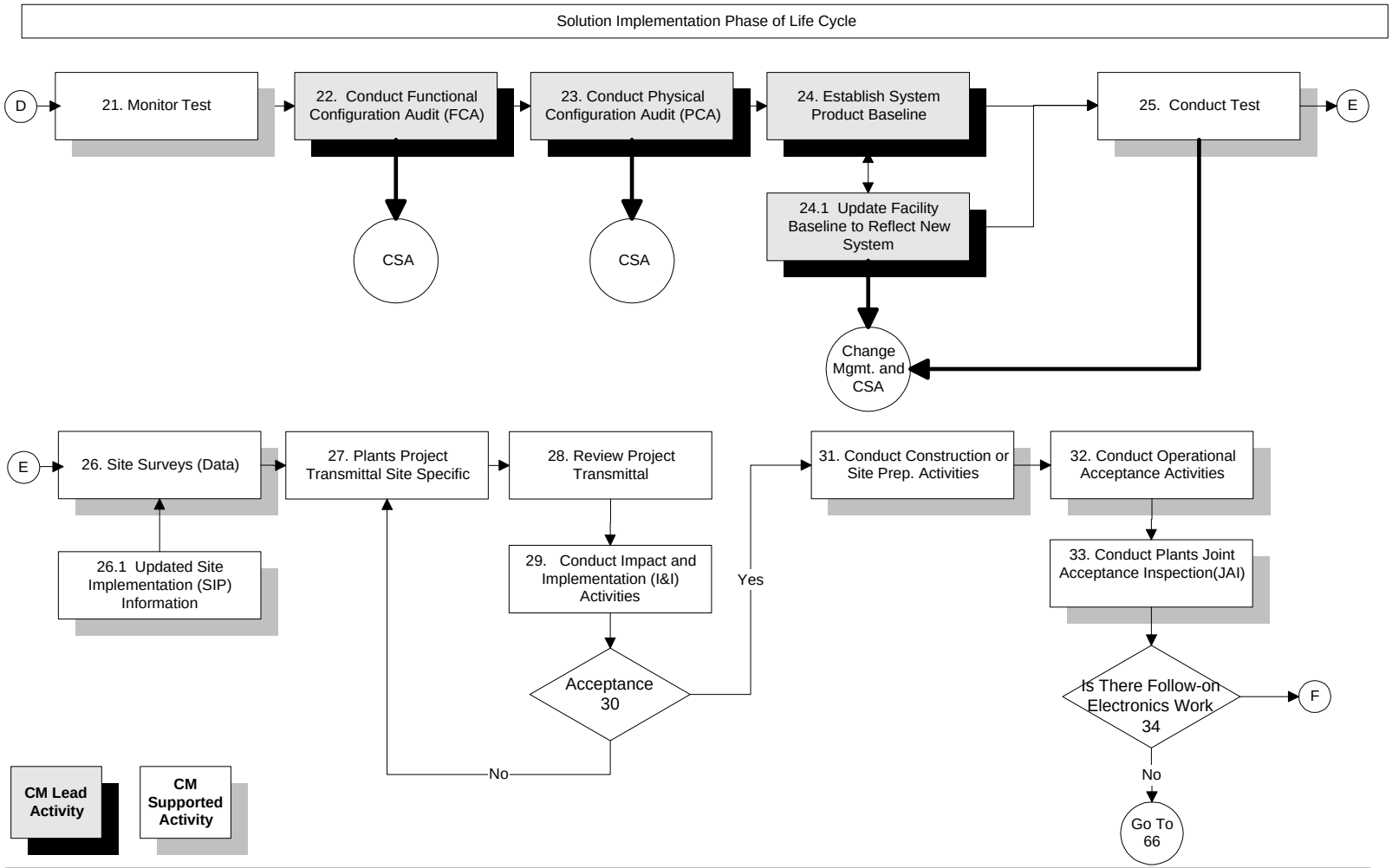
103. Provide Continuous Improvement/Assessment - **104**. Develop/Conduct CM Awareness Briefings - **105**. Develop/Attend Training

102. Perform Problem Management Tracking -**106.** Provide Non-conformance Tracking - **107.** Perform Drawing Management

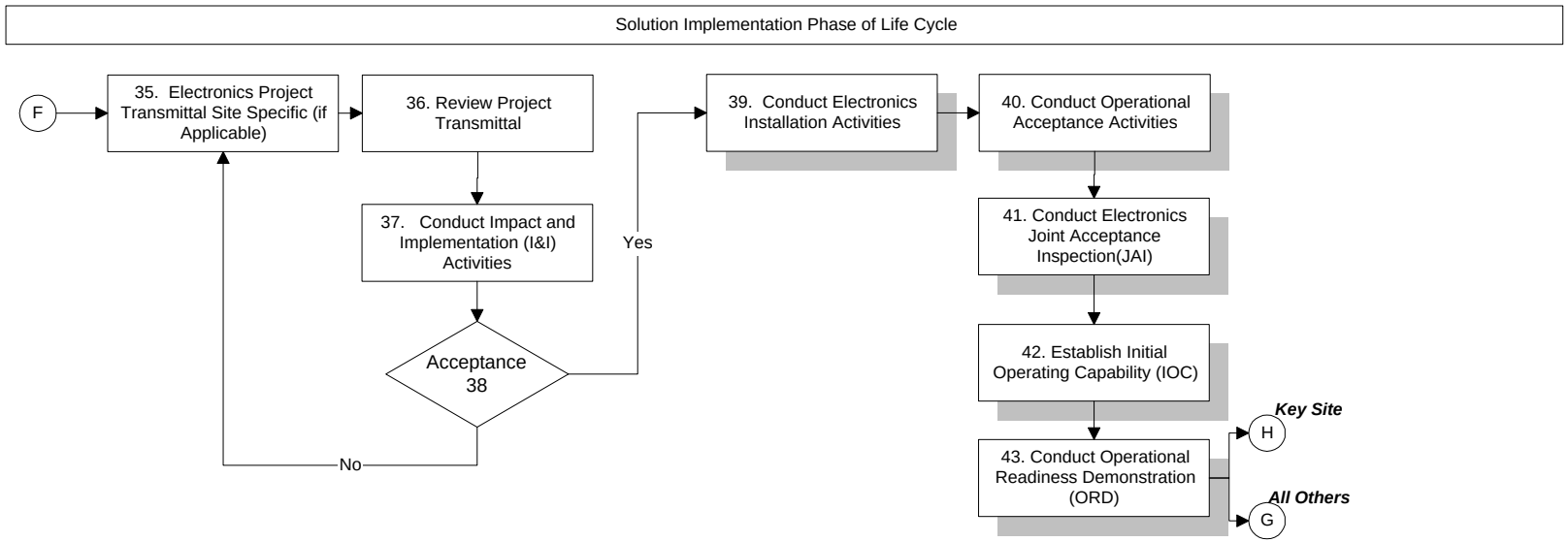
… Planning Continues …



… No, Not More Planning …



… Okay, This Must be the End …



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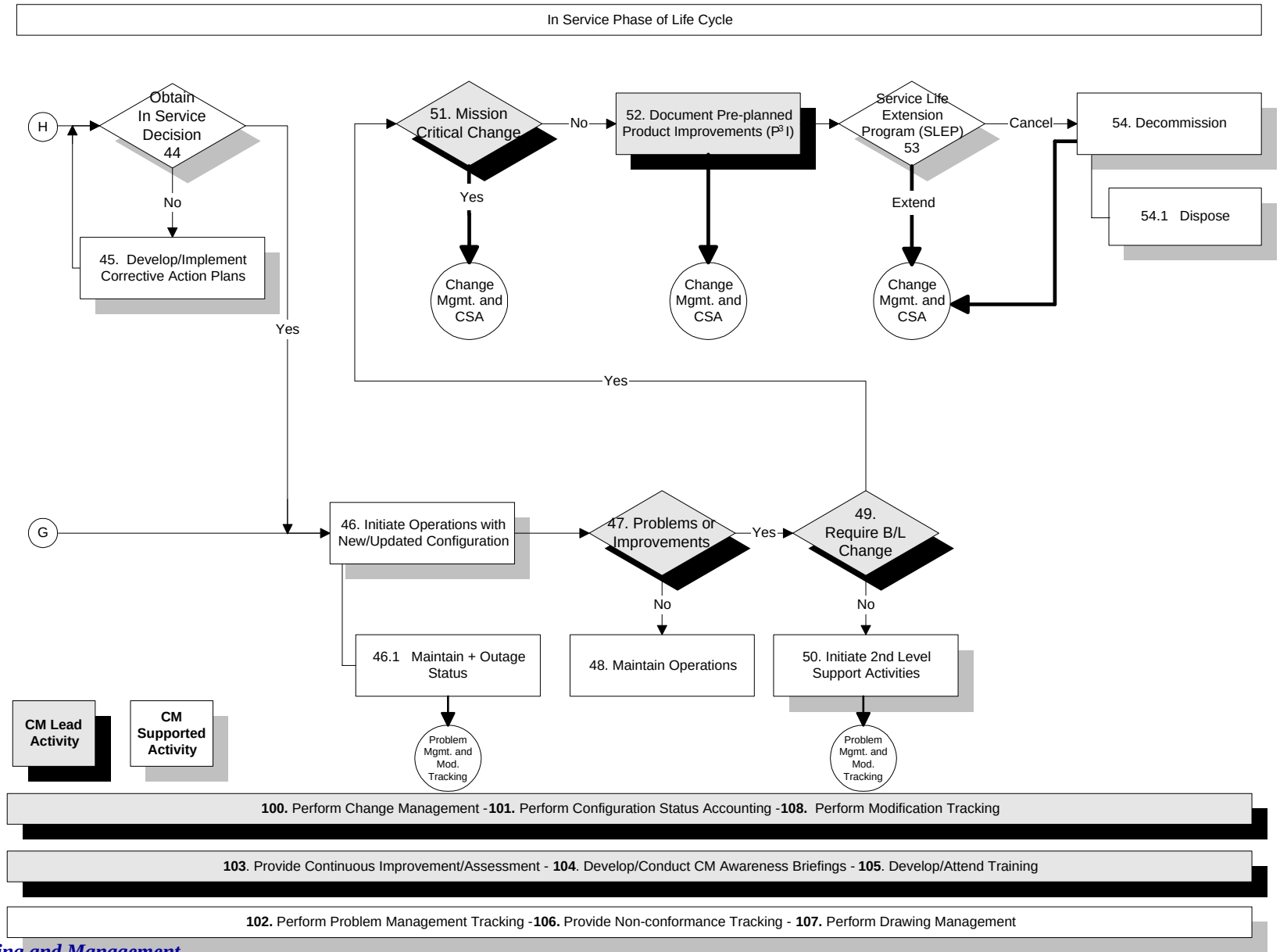
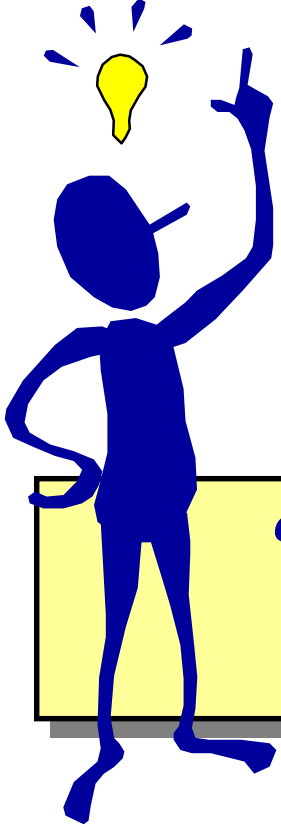
… Planning, During In-Service Mgmt. …

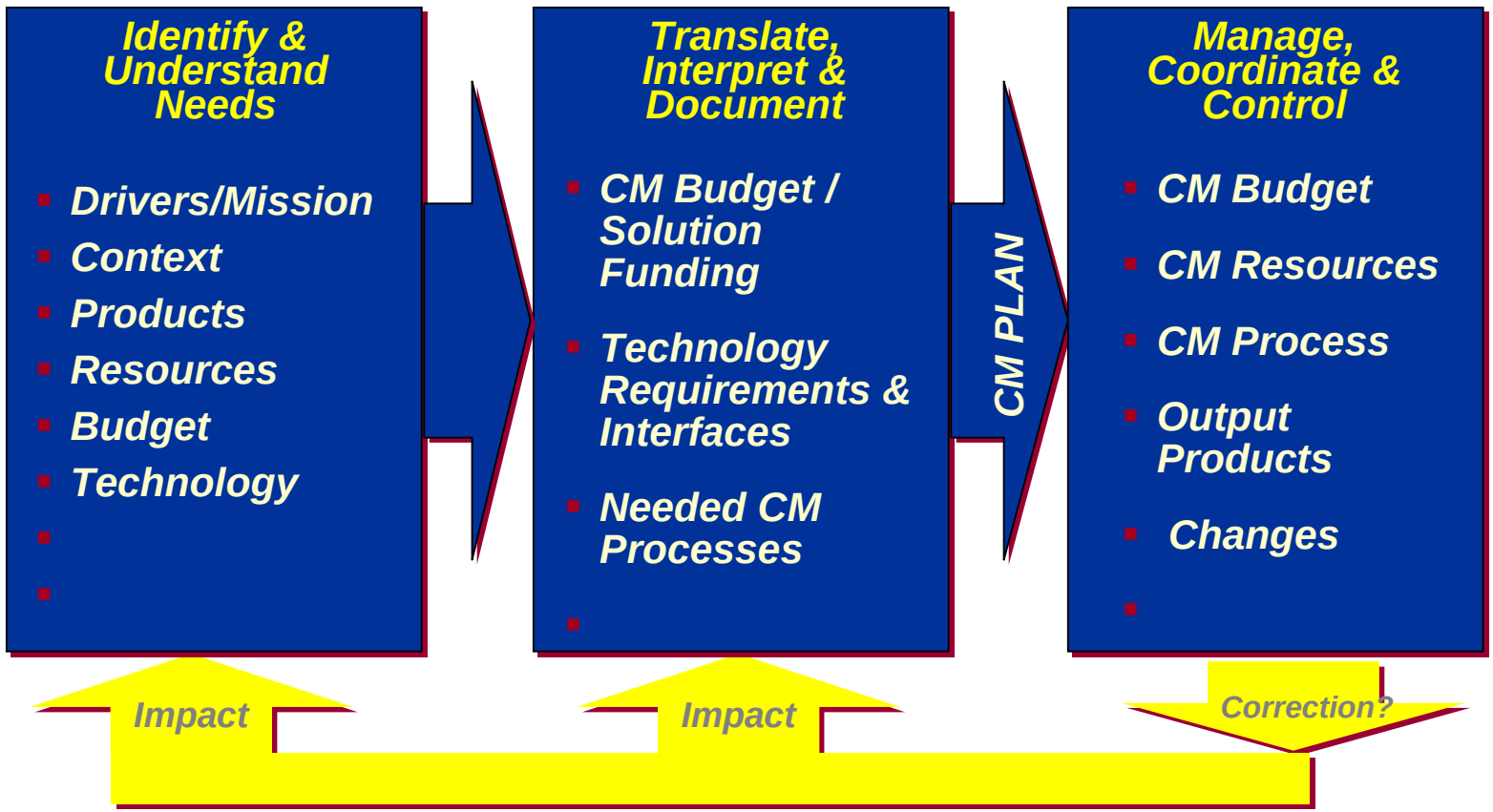




"How To's" of CM Planning and Management

- ☑ *What Am I Planning For*
- ☑ What Do I Need To Do
- ☐ *Where Do I Document What I Do*

Configuration Management Implementation Strategy



CM Needs Identification & Analysis

Identify & Understand Needs

- Drivers/Mission
- Context
- Products
- Resources
- Budget
- Technology

- FAA Orders
- RD, ASP, IPP
- Maintenance Philosophy
- iCMM, ISO, Other Internal Standards
- Agency Initiatives
- Information and/or Technology Requirements

What Else Do I Need To Do? Define Your Environment

- Identify context and environment in which CM is to be implemented:

  - ☑ Who will support and maintain the product(s)?
  - ☑ What is the technical complexity of the product?
  - ☑ What type of documentation package is necessary?
  - ☑ What level of change activity is anticipated?
  - ☑ How will the vendor's development be monitored?
  - ☑ What are the disposal attributes (environmental issues)?
  - ☑ What specific information is needed by users, maintenance activities, others?

What About the Vendor? Identify What's Needed

- What can the vendor supply, how will I know the quality/integrity of the deliverables:

  - ☑ What are the internal practices?
  - ☑ Who needs the information?
  - ☑ Are vendor information systems compatible with FAA systems?
  - ☑ If vendor is providing maintenance, are there additional things needed?

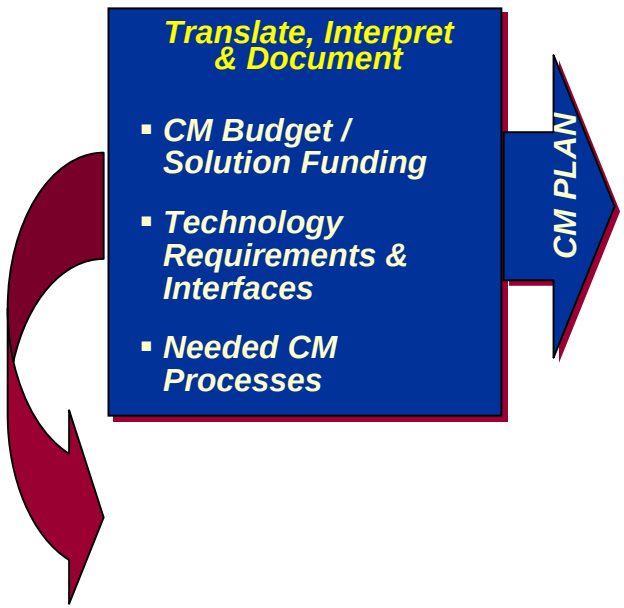
AMS Required Planning Documents

OPI AND WHEN	DOCUMENT/REPOSITORY	CM INPUT
OPI: LOB with need **Initial**: Early in Investment Analysis **Final**: At Investment Decision **Updated**: When any subsequent corporate decision concerning the acquisition program, or when there is a significant change to the Acquisition Program Baseline	**Requirements Document (RD)** - the primary force driving the search for a realistic and affordable solution to mission need during Investment Analysis. It translates the "need" in the MNS into initial top-level requirements addressing such concerns as performance, support-ability, physical and functional integration, human integration, security, test and evaluation, implementation and transition, quality assurance, configuration management, and in-service management. During IA, these initial requirements are evaluated against the cost, benefits, schedule, and risk of various candidate solutions and brought into balance with an affordable solution.	Define requirements for the configuration management of hardware, software, facilities, data, interfaces, tools, and documentation http://fast.faa.gov/ams/non_index/amsdocs.htm
OPI: PT **Initial**: Immediately after program approval at the Investment Decision **Updated**: When any subsequent corporate decision concerning the acquisition program, or when there is a significant change to the Acquisition Program Baseline	**Acquisition Strategy Paper (ASP)** - Describes the overall strategy for achieving the capability specified in the Acquisition Program Baseline, and explains why it is appropriate for the risk and special conditions and constraints associated with the acquisition program. Identifies all key elements of the program including, as appropriate, system/equipment acquisition, facility construction or modification, physical infrastructure modifications, functional integration with existing capabilities, and procurement of services.	Explain the strategy for satisfying requirements associated with managing the configuration of hardware, software, facilities, data, interfaces, tools, and documentation throughout the lifecycle of the acquisition program. http://fast.faa.gov/ams/non_index/amsdocs.htm

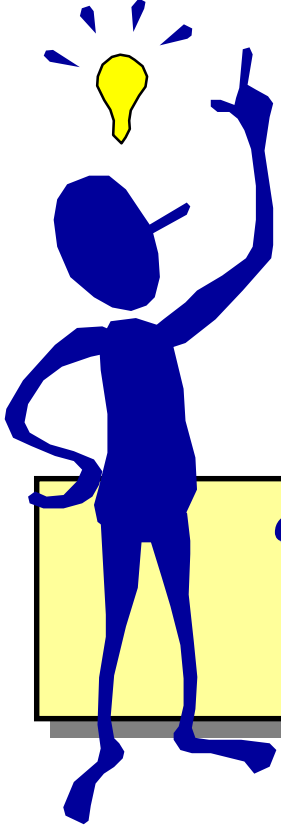
More AMS Required Planning Documents

OPI AND WHEN	DOCUMENT/REPOSITORY	CM INPUT
OPI: IPT **Initial**: Before release of RFO, transfer of funds, or commitment to any interagency agreement for program implementation. (Requests for information may be released for review and comment before IPP approval) **Updated**: When there is major redirection by top management, changes to the APB, Congressional manadates, etc.	**Integrated Program Plan (IPP)** - The Integrated Program Plan translates strategies in the Acquisition Strategy Paper into a detailed set of management, contracting, and technical actions and work activities necessary for successful implementation and management of the program over its lifecycle. The Integrated Program Plan encompasses all elements of program implementation. This may include the acquisition of systems and equipment, the construction or modification of facilities and the physical infrastructure, the functional integration of planned capabilities within the existing infrastructure, and the procurement of services. It also includes all work activity in diverse functional disciplines supporting the program such as systems engineering, logistics support, test and evaluation, security, implementation, configuration management, human integration, and quality assurance.	Identify and define the work activities that will be executed to achieve configuration manage-ment for hardware, software, facilities, data, interfaces, tools, and documentation throughout the lifecycle of the acquisition program. http://fast.faa.gov/ams/non_index/amsdocs.htm

CM Activity & Resource Planning



- Approved Programs and Baselines
- Request for CM Input to Procurements
- Configuration Information Requests
- Vendor Deliverables
- Program Management Personnel
- CM Personnel (Inside/Outside Org.)
- Engineering Personnel
- CM Plan Template
- CCB Charter



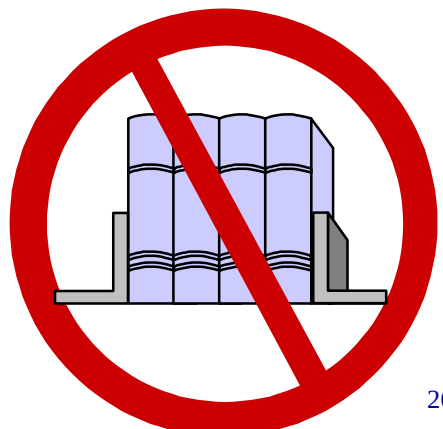
"How To's" of CM Planning and Management

- ☑ *What Am I Planning For*
- ☑ *What Do I Need To Do*
- ☑ Where Do I Document What I Do

Is There More To Do? Develop Your CM Plan

- Document how CM will be performed for the life cycle and integrated with other functions:

  - ☑ What are the CM activities to be performed and when?
  - ☑ Who participates in the CM activities and when?
  - ☑ What do I need from management and when?
  - ☑ Who needs CM information to do their job (or to do it better) and when?
  - ☑ What information does CM need, from whom, and when?
  - ☑ How do I measure CM effectiveness?



Sample – Solution Providers CM Plan Content

- Cover Page
- Table of Contents
- Section 1 – Introduction
- Section 2 – Reference Documents
- Section 3 – Organization
- Section 4 – CM Phasing & Milestones
- Section 5 – Data Management
- Section 6 – Configuration Identification
- Section 7 – Interface Management
- Section 8 – Configuration Control
- Section 9 – Configuration Status Accounting
- Section 10 – Configuration Verification and Audits
- Section 11 – Contractor/Vendor Control
- Appendices (as needed)

Applicable to Integrated Product Teams (IPT), Product Teams (PT) and other solution providers.

Sample – Regional CM Plan Content

- Cover Page
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- Section 1 – Introduction
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- Section 7 – Interface Management
- Section 8 – Configuration Control
- Section 9 – Configuration Status Accounting
- Section 10 – Configuration Verification and Audits
- Section 11 – Inventory Management **
- Section 12 – Library Management **
- Section 13 – Cable Management **
- Section 14 – Contractor/Vendor Control **
- Appendices (as needed)

** Regional different from Solution Provider

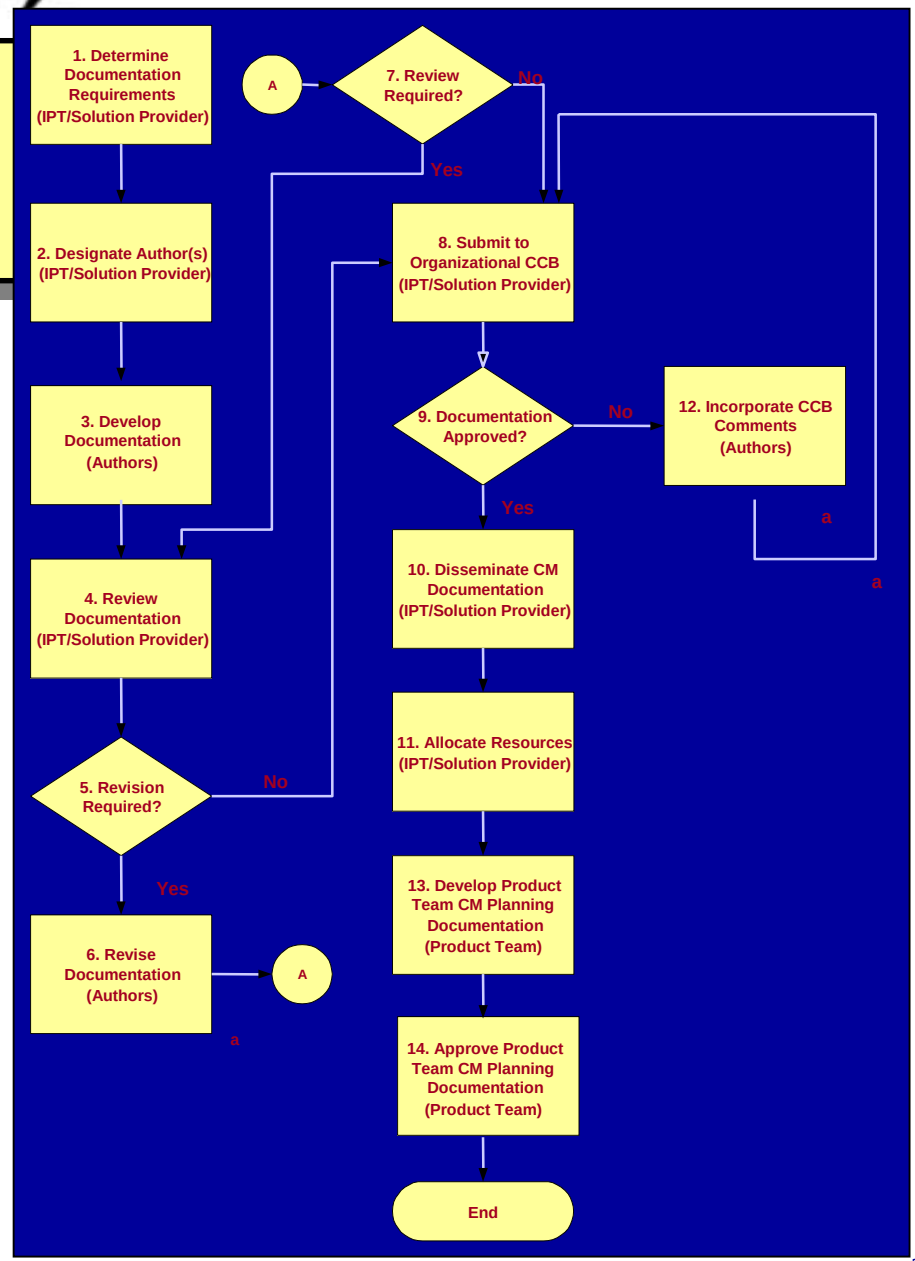
1800.66, Part Two Section III, Page 2-III-77

Sample CM Plan Approval & Change Process

Source:1800.66 change 1

Figure 3.2.2.1.5-1.

CM Plans and Processes



Establish A Configuration Control Board Charter Content

Example:

- *Cover Page*
- *Signature Page*
- *Table of Contents*
- *Introduction*
- *Purpose*
- *Authority*
- *CCB Responsibilities*
- *CCB Participants*
  - *Co-Chairs*
  - *Executive Secretary*
  - *Permanent Members*
  - *Ad Hoc Members*
  - *Technical Advisors*
- *CCB Administration*
- *CCB Recommendations and Decisions*
- *Change to the Charter*
- *Delegation of CCB Authority*
- *Appendix A – CI Listing and/or Support Activities*

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CM Required Planning Documents

OPI AND WHEN	DOCUMENT/REPOSITORY	CM INPUT
OPI: IPT, PT, Solution Providers CM **Initial**: With ASP and IPP **Updated**: When PTs require additional levels of information and/or when major programmatic changes occur	**CM Plan** – Defines the requirements for implementation CM within the organization. It addresses: configuration identification; configuration change control; configuration status accounting; verification and audits; (applicable) data management; administrative concerns (budget, schedule, etc.) and transition planning requirements.	Who, what, when and how each of the elements addressed is performed. What measures and metrics will be used to assess the effectiveness and added value. National CM Procedures 3.2.2.1
OPI: ANS and Regional CM **Initial**: After (initial baseline) of CM policy, process and procedures **Updated**: When there are major reogranizations, changes to procedures, changes in facility and/or power baselining requirements	**Regional CM Plan** – Establishes and provides the basis for uniform and consise CM practices for facility baselines, fielded systems, and regional unique equipment. The Master CM Plan is developed by ANS with regionally specific appendices. The Master CM Plan and its appendices addresse: configuration identification; configuration change control; configuration status accounting; verification and audits; (applicable) data management; administrative concerns (budget, schedule, etc.) and transition planning requirements.	Who, what, when and how each of the elements addressed is performed. What measures and metrics will be used to assess the effectiveness and added value. National CM Procedures 3.2.3.1

More CM Required Planning Documents and Transition Planning

OPI AND WHEN	DOCUMENT/REPOSITORY	CM INPUT
OPI: CI Owner/Region **Initial**: Establish Program; Assign IPT **Updated**: Changes/Additions of CIs, membership, processes	**CCB Charter and Operating Procedure** – Includes details addressing the "who" and "what" occurs when CM baselines are established by the agency authorized forum (i.e., CCB). This document also addresses the review of changes to the baselines. The details on how the CCB is conducted are addressed in the CCB's operating procedure.	Identify which CIs are under jurisdictation of CCB. Describe authority for establishing/reviewing changes to the CIs. Describe states of disposition and process (including roles) for moveing throught "change states" Include discussion on how charter and operating procedures are managed www.faa.gov/cm/charters.htm
OPI: PT Lead (Augmented by ISR Team) **Initial**: JRC-1 Decision **Updated**: Throughout Life Cycle	**ISR Checklist** – Supports the deployment planning, including the preparation for, and assessment of the readiness of the solution to be implemented, so that deployment of the system will not create a critical deficiency in the NAS. The preparation for and assessment of deployment readiness is a process that begins early in the acquisition process and results in an ISD.	Responsible for CM section of checklist and providing NAS and other configuration information in concert with the CM plan *Coming to AMS/FAST*

Deployment Focused Planning Documents

OPI AND WHEN	DOCUMENT/REPOSITORY	CM INPUT
OPI: Key Testing Org. (ACT, AOS, ATQ, or Field Personnel) **Initial**: As directed in the ASP and or IPP **Updated**: When there are major requirements modifications	***Additional Testing Plans** – As outlined in the ASP and IPP, this set of documention describes the specific testing instructions: Development, Operational, Production Acceptance, Site Acceptance testing.	Identify who is responsible for managing the testing configuraitons; relationship between testing and productions configurations and change vehicles; how are the testing events closed out http://fast.faa.gov/test_evaluation/pg8.html#6.
OPI: AXX-400, ANI **Initial**: As soon as required to ensure schedule compliance **Updated**: As changes to system development occur (typically the MDFM is updated at the beginning of each month)	***Additional Transition Planning (Cutover Plans)** – Defines the sequenced procedures and steps to bring new equipment to an operational state, as well to transition services from the old capability to the new. It also defines procedures for deactivating, removing, and disposing of residual equipment, GFE/GFI, and real and personal property. It is vitally important for the PT ***to keep the Material Delivery Forecast Module up-to-date*** so the Regions can have the right sites ready for the equipment at the right time.	Identify who is responsible for managing configurations during cutover; relationship between tested and production systems (changes). http://fast.faa.gov/flowcharts/testflow/sys60I.htm#I1

*Addresses additional subject information beyond what is included in the key planning documents (RD, ASP, IPP)

CM Implementation

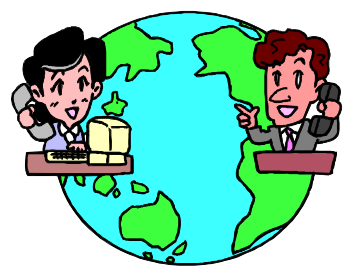
Manage, Coordinate & Control

- CM Budget
- CM Resources
- CM Process
- Output Products
- Changes

- CM Plans Implementation
- CCB Charters Activation
- Vendor Requirements Controls
- Documentation Listings
- CM Performance Reports /Assessments Collection & Reporting
- OPI CM Processes and Procedures Execution
- Training/Communication Plan(s) Implementation

Anything Else? Training and Communication

- Train process participants and communicate with customers and stakeholders:
  - ☑ Training should make clear the CM objectives, techniques, functional processes, procedures, organizational interfaces and responsibilities.
  - ☑ Training and communication should address the state of CM and facilitate issue resolution (along with preventing future occurrences).
  - ☑ Training should be ongoing and consistent with agency CM processes and initiatives.



Am I Through Yet? Performance Measurements

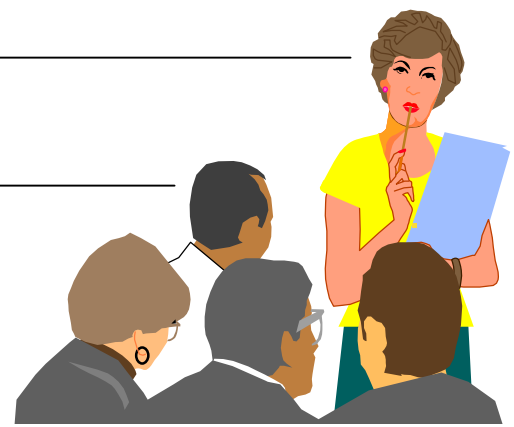
- Assess the effectiveness of the CM plan implementation and performance of the CM discipline, use measures that:

  - ☑ Are meaningful in terms of customer relationships?
  - ☑ Relate to the organization (program and LOB) goals and objectives?
  - ☑ Are timely, simple, logical and repeatable and economical to capture?
  - ☑ Show a trend over time which will drive forward focused action(s)?

Putting It All Together

Planning and Management: COTS Single Source Manufacturer

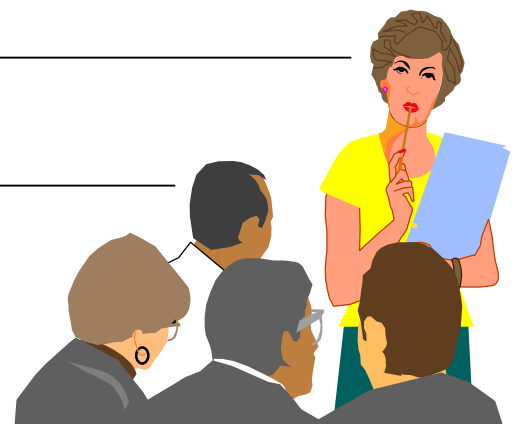
Q: How can CM Planning and Management help?



Hint: Ensure that CM principles are applied to supplement good program manage-ment and planning for the life cycle.

Planning and Management: "Go-Back" Teams or Repeated Site Surveys

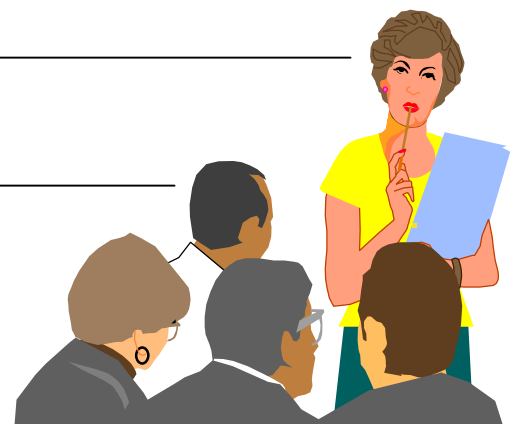
Q: How can CM Planning and Management help?



Hint: Ensure that configurations are identified, managed and communicated with all users and stakeholders.

Planning and Management: Procuring Replacement Systems

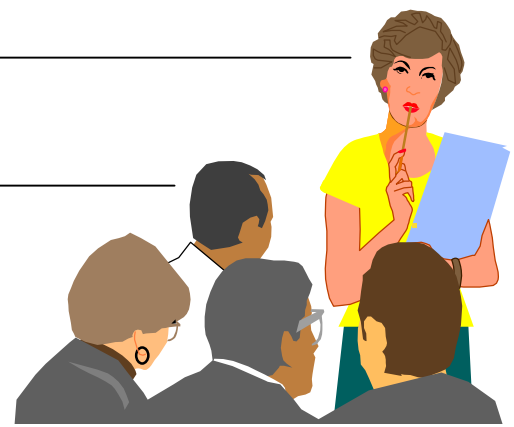
Q: How can CM Planning and Management help?



Hint: Ensure that CM principles are applied to facilitate system re- procurements.

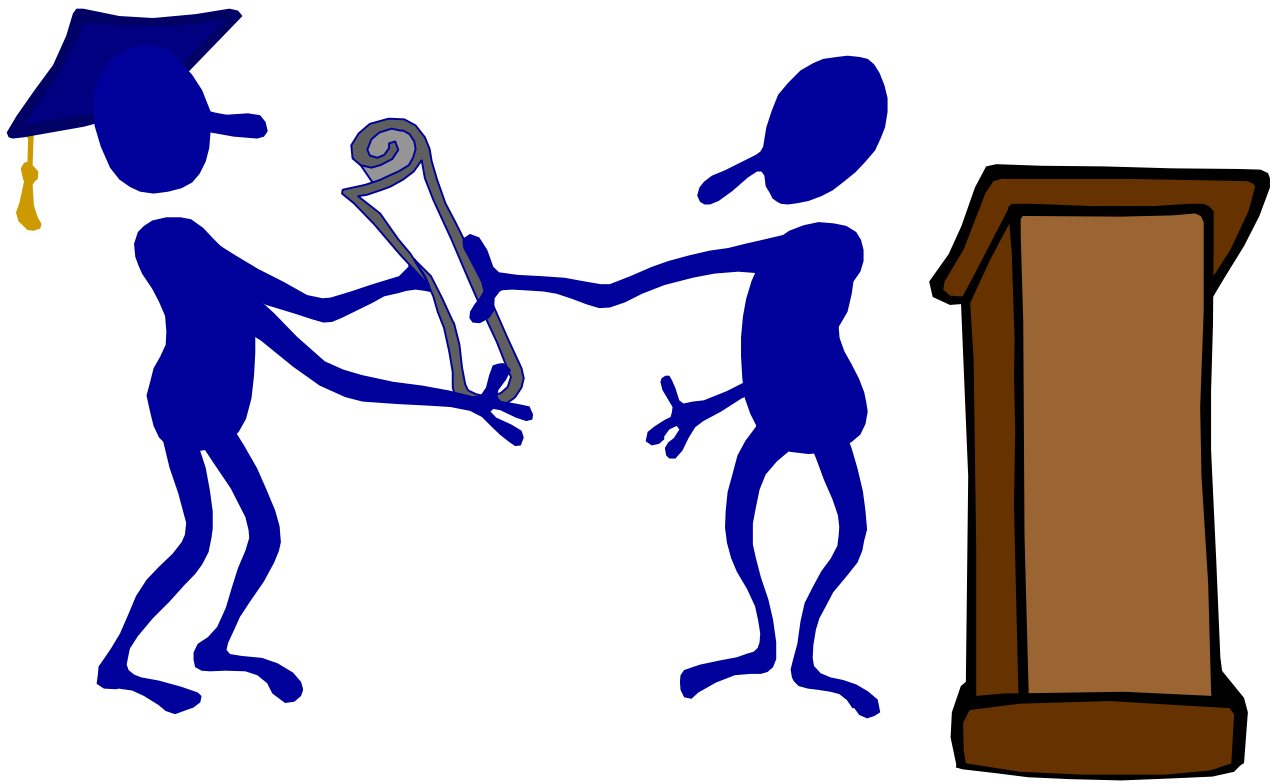
Planning and Management: Customer Requirements are Not Being Met

Q: How can CM Planning and Management help?



Hint: Ensure that CM principles are applied to and coordinated with the engineering and logistics processes.

Summary



Why is CM Planning and Management Necessary?

- ✓ *Apply appropriate CM process and activities.*
- ✓ *Establish organizational responsibilities.*
- ✓ *Determine resources necessary to perform processes and activities.*

Relationship to CM Tenets

Where I document all the activities necessary to implement CM for the life cycle.

CM Planning and Management

Configuration Identification
How will I Identify and Document my Products/Sites

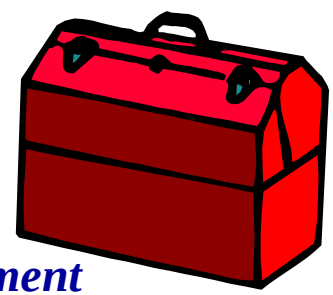
Configuration Status Accounting
How will I Know What I Have and Where It Is

Change Management
How will I Ensure that Improvements to my product are Captured and that the Right People Review these Improvements

Configuration Verification and Audit
How will I Know that I Have What I'm Suppose to Have

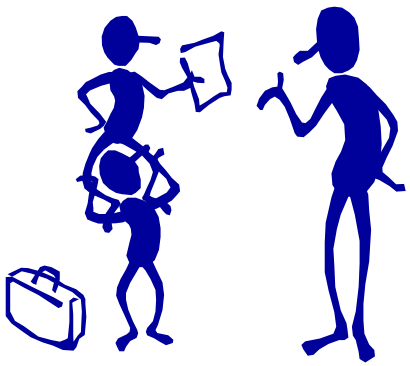
Conclusion

- ✓ *CM Managers must be life cycle focused.*
- ✓ *Documented CM processes are essential for project/organizational communication.*
- ✓ *CM process must add value and be cost effective.*
- ✓ *CM planning is ongoing.*



CM Planning & Management
Tools for Success!!

Additional Resource Information



ACM-20, 202/358-5294

- CM Planning and Management Information
  - FAA Order 1800.66 change 1
  - http://www.faa.gov/cm (***FAA NAS CM***)
  - http://www.faa.gov/cm/cmlinks1.htm (***Solution Provider CM***)
  - EIA/IS-649 (***CM Guidance***)
  - MIL-HDBK-61 (***CM Guidance***)
  - MIL-STD-2549 (***Data Elements***)

- Other Planning and Management Information
  - http://fast.faa.gov/ (***Acquisition Management System policy, guidance, templates, etc.***)
  - http://www.faa.gov/ipds/faa-ipds.htm (***IPDS Guidance, Briefings, Tools***)
  - http://ats.awa.faa.gov/ars/IRC/index.HTM (***ARS Requirements Management Info***)
  - http://ans.faa.gov/ans700/anspolic/IPG1997/ipgfrm.htm (***ANS Implementation Process Guidelines***)
  - http://adl.tc.faa.gov/pubdownload/isrchk.pdf (***ISR Checklist***)

Additional Resource Information

- NAS System/Programmatic Information
  - http://www.nas-architecture.faa.gov/CATS/Disclaimer/default.htm (***CATS-I***)
  - http://172.27.164.34/spire/spire3.asp (***SPIRE***)
  - http://interweb.faa.gov/jrc/ (***JRC***)
  - http://www.faa.gov/acm/acm10/reports.htm (***ACM Evaluation***)
  - http://ans.faa.gov/ans700/ans700pipfrm.htm (***PIPs***)
  - http://ans.faa.gov/ANS700/SmtShets/UPDATENOTICE.asp (***Smart Sheets***)
  - http://interweb.faa.gov/ARAMIS/INTRAN.HTM (***FAA Intranet Navigation***)

Acronym List

- ***APB*** - Acquisition Program Baseline
- ***ASP*** - Acquisition Strategy Paper
- ***B/L*** - Baseline
- ***CATS-I*** - Capability Architecture Tool Suite - Internet
- ***CC*** - Change Control
- ***CCB*** - Configuration Control Board
- ***CCD*** - Configuration Control Decision
- ***CDRL*** - Contract Data Requirements List
- ***CI*** - Configuration Item and/or Identification
- ***CM*** - Configuration Management
- ***COTS*** - Commercial Off The Shelf
- ***CSA*** - Configuration Status Accounting
- ***DID*** - Data Item Description
- ***FAA*** - Federal Aviation Administration
- ***FAST*** - FAA Acquisition System Toolset
- ***FCA*** - Functional Configuration Audit
- ***GFE*** - Government Furnished Equipment
- ***GFI*** - Government Furnished Information
- ***IA*** - Investment Analysis
- ***iCMM*** - Integrated Capability Maturity Model
- ***I/F*** - Interface
- ***I&I*** - Impact and Implementation
- ***IOC*** - Initial Operating Capability
- ***IPDS*** - Integrated Product Development System
- ***IPP*** - Integrated Program Plan
- ***ISD*** - In-service Decision
- ***ISO*** - International Organization for Standardization
- ***ISR*** - In-service Review
- ***JAI*** - Joint Acceptance Inspection
- ***JRC*** - Joint Resources Committee
- ***LOB*** - Line of Business
- ***MCI*** - Master Configuration Index
- ***MDFM*** - Materiel Delivery Forecast Module
- ***MNS*** - Mission Needs Statement
- ***NAS*** - National Airspace System
- ***NCP*** - NAS Change Proposal
- ***NDI*** - Non-developed Item
- ***OPI*** - Office of Primary Interest
- ***ORD*** - Operational Readiness Demonstration and/or Date
- ***PIP*** - Program Implementation Plan
- ***PCA*** - Physical Configuration Audit
- ***PSL*** - Program Support Library
- ***PT*** - Product Team
- ***RD*** - Requirements Document
- ***RFO*** - Request For Offer
- ***SA*** - Status Accounting
- ***SIP*** - Site Implementation Plan
- ***SLEP*** - Service Life Extension Program
- ***SOW*** - Statement of Work
- ***SPIRE*** - Simplified Program Information Reporting and Evaluation
- ***tbd*** - To Be Determined
- ***V&A*** - Verification and Audit

Questions
Or
Comments